

dorsal base two minute triangular elevations ending in a more elevated point (carina), which all the *Trimium* possess, in some covered by the elytra. The last antennal joint bluntly ovate, resembling those in *T. impunctatum*. Legs not inflated, probably a ♀. Palpus securiform, much like *parvulum*, though smaller.

Cedar Rapids, Ia. This may be only a variety of *T. parvulum*, but its size, head, the longer elytral impressions and the punctuation near the sutural lines are unlike.

For comparison I will give here a short description of

**T. parvulum** Lec.—Length 0.9 mm.—Frontal margin slightly arcuate, the sulcus more hyperbolic than parabolic, occiput much impressed and sulcate to the middle of the vertex, the pronotal sulcus deep, angulate in the middle, where the angle reaches half way to the base. Elytra widest near and behind the middle. Abdominal base narrower than the width of the elytra and as wide as the tip of the same, the basal segment wider at the tip; all the segments equal in length, except the second ventral longer.

Pennsylvania, Illinois, Iowa.

The only unrecognizable species for me is *T. discolor*, which seems to be figuring in different collections by any sort of form, and to be differing from *T. parvulum* only by the convex occiput.

The form of the palpus is, in *dubium*, like that in *laticolle*, but smooth; in *thoracicum* is third joint smaller than the club of the second, the last as in *parvulum*, but much longer; in *convexulum* the third and the club of the second rather small, the fourth as long as the last antennal joint, slender, conical, widest in the basal fourth.

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## REVISION OF THE SPECIES OF ANTHRAX FROM AMERICA NORTH OF MEXICO.

BY D. W. COQUILLET.

In the TRANSACTIONS of the American Entomological Society, volume xiv, pages 159 to 182 (published in October, 1887), I gave a monograph of the species belonging to the genus *Anthrax* from America North of Mexico, characterizing thirty-five of the species as new. In December, 1886, and January, 1887, the Baron Osten Sacken published descriptions of several new species of *Anthrax* from this region in "Biologia Centrali-Americana," Part Diptera,—a paper that I had not seen at the time of writing up the monograph above referred to. It thus happens that three of the species which I characterized as new had been previously described by Osten Sacken; these are: *Keenii* Coq. = *Stonyx clelia* O. S.; *plagosa* Coq. = *rex*

O. S.; and *otiosu* Coq. = *selene* O. S. When we consider the large number of new species described by us independently, it is somewhat strange that a greater number of synonyms were not made.

In the work above quoted, the Baron Osten Sacken separates from *Anthrax* proper a small group of species under the generic term of *Lepidanthrax*, describing as new one species (*L. angulus*), which he credits to Mexico and California, but which is unknown to me in nature. Five of the species described in my monograph belong to this new genus; these are: *proboscidea* Loew, *agrestis* Coq., *campes- tris* Coq., *lauta* Coq. and *inaurata* Coq. While these species do not possess any single character not also possessed by some of the species of *Anthrax* as at present limited, still they possess an assemblage of character not found in any of the other species known to me; these characters, which are present in each of the species above named, and which will readily enable them to be recognized from those belonging to the genus *Anthrax*, as restricted, are as follows:

**Lepidanthrax** O. S.—Fifth vein having the penultimate section from two-thirds as long to fully as long as the ultimate section; base of third antennal joint short, onion-shaped, the styliform portion slender and almost bristle-like; proboscis projecting at least one-fourth its length beyond the oral margin; front tibiae provided with bristles; sides of abdomen furnished with long scales; wings marked with brown clouds.

I cannot accept Osten Sacken's proposed new genus *Stonyx*; it is simply an *Anthrax* with three submarginal cells in each wing. Species of *Anthrax*, which ordinarily have only two of these cells in each wing, are not infrequently found in which three of such cells occur in each wing, and sometimes there are two submarginal cells in one wing, and three in the other. It is evident that a character so variable as this should never be used for separating genera, since this would result in placing specimens of the same species into two different genera. *Stonyx* falls into the same category as Osten Sacken's previously proposed genus *Dipalta*, which must be rejected upon the same grounds.

With increased materials, I have been enabled to make a few corrections in regard to certain forms which I formerly considered varieties. Thus, *hypomelas* Macq. and *lateralis* Say, which in my monograph I considered as being mere varieties of *alternata* Say, are certainly distinct species, separable by the characters given in the accompanying table. *Pretiosa* Coq. and *vacans* Coq. are also evidently distinct species, and not mere varieties of *molitor* Loew, as I formerly regarded them.



- 6.—Pile of abdomen largely black; base of third antennal joint short-conical. 7.  
 Pile of abdomen white; body destitute of black pile; base of third antennal joint elongate-conical; claws of front tarsi minute.....55. **cinefacta.**
- 7.—Claws of front tarsi minute, scarcely one-fourth as long as those of the other tarsi; breast destitute of black pile.....8.  
 Claws of front tarsi larger, about one-half as long as those of the other tarsi; breast provided with black pile; tomentum of occiput pure white. 14. **anna.**
- 8.—Tomentum of occiput pure white, a white tomentose cross-band on front part of thorax passing above the wings and crossing base of scutellum. 56. **inculta.**  
 Tomentum of occiput light yellow; no white tomentose cross-band on thorax and scutellum.....57. **terrena.**
- 9.—Sides of abdomen destitute of long scales.....10.  
 Sides of abdomen with a fringe of long scales; face greatly retreating below; tomentum of the third abdominal segment wholly black. 58. **squamigera.**
- 10.—Abdomen having black pile on sides of some of the segments anterior to the fifth.....11.  
 Abdomen destitute of black pile on sides of any segment anterior to the fifth.....22.
- 11.—Third antennal joint short-conical or subglobular at its base, then suddenly constricted, the terminal portion styliform.....12.  
 Third antennal joint gradually tapering from base to apex, destitute of a long styliform portion; tomentum of body largely brassy-yellow; front tibiae destitute of bristles..... 59. **gemella.**
- 12.—Front tibiae provided with bristles.....13.  
 Front tibiae destitute of bristles .....16.
- 13.—Tomentum of abdomen never bronze-colored, or if approaching this color then the third segment is furnished with light colored tomentum... 14.  
 Tomentum of abdomen largely, of thorax and scutellum wholly bronze-colored; third segment of abdomen destitute of light-colored tomentum; legs black.....4. **anea.**
- 14.—Black and light-colored tomentum of abdomen not forming distinct cross-bands.....15.  
 Black and light-colored tomentum of abdomen forming distinct alternating cross-bands; pile on sides of fourth segment largely or wholly whitish; tomentum of occiput yellowish; base of wing of male furnished with an epaulette of silvery scales; last segment in the male destitute of silvery tomentum..... 7. **alternata.**
- 15.—Tomentum of thorax yellowish; pile of pleura and of breast white, length of body less than nine mm.....15. **supina.**  
 Tomentum of thorax black; pile of pleura and of breast largely black; that on third abdominal segment largely or wholly black; length of body over 12 mm.....7a. **hypomelas.**
- 16.—Abdomen destitute of bronze-colored tomentum.....17.  
 Abdomen largely bronze-colored tomentose; last segment in the male furnished with silvery tomentum; no epaulette of silvery scales at base of wings.....5. **nebulosus.**

- 17.—Tomentum on base of wings in front wholly yellow, only the pile or bristles of the front edge black.....18.  
 Tomentum on base of wings in front largely or wholly black; that on the occiput usually white; base of wings destitute of an epaulette of silvery scales in the male.....19.
- 18.—Bristles of thorax black; light colored tomentum of abdomen white; pile of sides of abdomen abundant, depressed.....60. **hireina**.  
 Bristles of thorax yellow; light colored tomentum of abdomen yellowish, except a cross-band of white tomentum on apex of the first segment; pile on sides of abdomen, except on the first two segments, very sparse.  
 12. **turbata**.
- 19.—Claws of front tarsi nearly one-third as long as those of the middle tarsi..20.  
 Claws of front tarsi two-thirds as long as those of the middle tarsi; last segment of abdomen of male destitute of silvery tomentum.  
 15. **supina**.
- 20.—Last two or three segments of the abdomen provided with dark reddish brown tomentum, which is noticeably darker than the remaining tomentum, except that which is black.....6. **consessor**.  
 Last two or three segments destitute of yellowish or brown tomentum, which is darker than that on the remaining segments.....21.
- 21.—Wings, except in the costal cell, pure hyaline.....7b. **lateralis**.  
 Wings tinged with brown in the first basal, marginal, first submarginal and first posterior cells.....74. **faunus**.
- 22.—Front tibiae provided with bristles.....23.  
 Front tibiae destitute of bristles.....26.
- 23.—Tomentum of abdomen dense, forming cross-bands; sides of segments five and six usually provided with black pile; base of wings of male furnished with an epaulette of silvery scales; last abdominal segment destitute of silvery scales.....24.  
 Tomentum of abdomen sparse, not forming distinct cross-bands; pile of dorsum and sides abundant, bushy.....9. **fulviana**.
- 24.—Venter destitute of cross-bands of black tomentum; the yellowish pile and tomentum of abdomen sometimes dark, but never deep golden; the pile mostly erect and bushy.....61. **agrippina**.  
 Venter with a cross-band of black tomentum on bases of fifth and following segments..25.
- 25.—Venter with black tomentum on the second and third segments; light colored pile and tomentum of abdomen never deep golden-yellow; pile of abdomen mostly erect and bushy; pile of breast, coxæ and venter, largely black; of sides of fifth and sixth segments wholly black; that at tip of last segment also black.....11b **vacans**.  
 Venter destitute of black tomentum on second and third segments; light colored pile and tomentum of abdomen deep golden-yellow; the pile mostly depressed and not bushy; breast, coxæ and venter destitute of black pile.....11a. **pretiosa**.
- 26.—Venter with a cross-band of black tomentum on base of third as well as on bases of fifth and sixth segments; base of wings destitute of an epaulette of silvery scales in the male; last abdominal segment in the male furnished with silvery scales.....10. **nuscaria**.

- Venter destitute of a cross-band of black tomentum on base of third segment, but with such a cross-band at bases of fifth and sixth segments; base of wings in the male furnished with an epaulette of silvery scales; the last abdominal segment destitute of such scales.....11. **molitor**.
- 27.—Proboscis not or scarcely projecting beyond the oral margin. ....28.  
 Proboscis projecting from one-fourth to one-half its length beyond the oral margin; front tibiæ provided with bristles; antennæ wholly black; face black, retreating below.....18. **caprea**.
- 28.—Scutellum wholly black.....29.  
 Scutellum partly, or wholly reddish; front tibiæ destitute of bristles; legs and first two antennal joints reddish.....34. **adumbrata**.
- 29.—Abdomen furnished with black tomentum.....30.  
 Abdomen destitute of black tomentum .....33.
- 30.—Segments four and five of abdomen provided with white or yellow tomentum .....31.  
 Segments four and five destitute of white or yellow tomentum; black tomentum of body appearing brassy in certain lights.....63. **telluris**.
- 31.—Posterior femora and tibiæ destitute of a fringe of long scales; outline of brown on wings indistinct .....32.  
 Posterior femora and tibiæ furnished with a dense fringe of long scales, both above and below; outline of brown on wings well defined.  
 16. **inops**.
- 32.—Brown of wings invades the discal and the third and fourth posterior cells.  
 27. **vana**.
- Brown of wings does not invade these cells.....74. **taunus**.
- 33.—Pile of breast wholly white or yellowish, never largely black.. .....34.  
 Pile of breast largely or wholly black.....14. **anna**.
- 34.—Face reddish; front tibiæ provided with bristles; claws of front tarsi well developed.....33. **edititia**.  
 Face largely or wholly black; front tibiæ destitute of bristles; claws of front tarsi minute.....17. **eudora**.
- 35.—Scutellum wholly black.....76.  
 Scutellum partly or wholly reddish .....74.
- 36.—Abdomen destitute of black tomentum.....37.  
 Abdomen provided with black tomentum.....54.
- 37.—Face, femora and tibiæ partly or wholly reddish.....78.  
 Face wholly black.....49.
- 38.—Apex of wings beyond base of second submarginal cell distinctly hyaline and brown.....39.  
 Apex of wings beyond base of second submarginal cell wholly hyaline, never distinctly hyaline and brown .....41.
- 39.—Proboscis not projecting beyond the oral margin; front tibiæ destitute of bristles.....40.  
 Proboscis projecting half its length beyond the oral margin; front tibiæ provided with bristles.....3. **clelia**.
- 40.—Brown of wings fills apex of first posterior cell; a brown spot in apex of anal cell.....2. **serpentina**.  
 Brown of wings does not fill apex of first posterior cell; no brown spot in apex of anal cell.....45. **mirra**.

- 41.--Wings with a brown cloud at base of second submarginal cell: face much produced below .....42.  
 Wings destitute of a brown cloud at base of second submarginal cell.....43.
- 42.--Front tibiae provided with bristles, claws of front tarsi well developed; abdomen not broadly reddish on the sides.....33. **edititia**.  
 Front tibiae destitute of bristles, claws of front tarsi minute; abdomen broadly reddish on the sides.....39. **impiger**.
- 43.--Front tibiae destitute of bristles; breast and sides of abdomen destitute of black pile; face greatly produced below .....41.  
 Front tibiae provided with bristles, claws of front tarsi well developed....46.
- 44.--Outline of brown on wings distinct, the brown color darkest outwardly, and much darker than the pure hyaline apex; tip of discal cell in the pure hyaline part.....45.  
 Outline of brown on wings indistinct: the brown gradually fading out, usually filling the discal cell to its apex.....1. **junctura**.
- 45.--Ground color of thorax opaque, velvet-black, anal and axillary cells wholly brown, dark color of wings deep reddish brown.....31. **fulvohirta**.  
 Ground color of thorax polished black; dark color of wings pale yellowish brown.....64. **vulpina**.
- 46.--Brown of wings does not reach base of second submarginal cell.....47.  
 Brown of wings extends along the veins to base of second submarginal cell; outline of this color indistinct, the brown forming a border to the veins surrounding the discal cell.....38. **fumida**.
- 47.--Pile of pleura, breast, coxæ and sides of abdomen almost or entirely yellowish, never with many black ones intermixed; brown of wings paler.....48.  
 Pile of pleura, breast and coxæ largely black; several black ones on sides of abdomen; dark color of wings opaque and very deep reddish brown, not filling entire base of discal cell to small cross-vein, and scarcely encroaching on the third posterior cell.....35. **palliat**.
- 48.--Brown of wings nearly or quite fills entire base of discal cell to small cross-vein; tomentum of occiput white .....36. **perplexa**.  
 Brown of wings does not fill entire base of discal cell to small cross-vein; tomentum of occiput usually yellowish.....33. **edititia**.
- 49.--Ground color of thorax polished black; dark color of wings pale smoky brown .....50.  
 Ground color of thorax opaque, velvet-black; anal and axillary cells wholly brown; dark color of wings opaque, dark reddish brown.  
 31. **fulvohirta**.
- 50.--Ground color of abdomen black, the apex alone sometimes reddish..... 51.  
 Ground color of abdomen yellow; the first and last segments alone black; front tibiae destitute of bristles; claws of front tarsi minute.  
 65. **crocina**.
- 51.--Brown of wings fills entire base of discal cell to the small cross-vein ....52.  
 Brown of wings does not fill entire base of discal cell to small cross-vein; front tibiae destitute of bristles; claws of front tarsi one-half as long as those of the middle tarsi.....66. **tautilla**.
- 52.--Front tibiae provided with bristles.....53.  
 Front tibiae destitute of bristles; tomentum of abdomen wholly yellowish white; apical fourth of discal cell pure hyaline ..... 67. **variata**.



- 53.—Discal cell wholly brown; anal, axillary and fourth posterior cells also brown .....68. **vasta**.  
 Discal cell with the apex pure hyaline.....36. **perplexa**.
- 54.—Face, femora and tibiae partly or wholly reddish.....55.  
 Face wholly black.....60.
- 55.—Brown of wings does not reach base of second submarginal cell.....56.  
 Brown of wings reaches base of second submarginal cell along the veins;  
 outline of the brown not distinct; second vein strongly curved S-shaped  
 before its apex .....45. **mira**.
- 56.—Front tibiae provided with bristles.....57.  
 Front tibiae destitute of bristles; dorsum of thorax opaque, velvet-black;  
 anal and axillary cells wholly brown.....31. **fulvohirta**.
- 57.—Veins at bases of first and fourth posterior cells not bordered with subhyaline; face greatly produced below; proboscis never projecting half its length beyond the oral margin.....58.  
 Veins at bases of first and fourth posterior cells distinctly bordered with subhyaline; face retreating below; proboscis projecting half its length beyond the oral margin.....41. **rex**.
- 58.—Brown of wings does not fill entire base of discal cell to small cross-vein;  
 length of body 8—11 mm.....59.  
 Brown of wings fills entire base of discal cell to small cross-vein; length  
 of body 5—9 mm.....36. **perplexa**.
- 59.—Anal cell wholly brown .....69. **lacumaris**.  
 Anal cell having nearly the apical third hyaline.....29. **syrtis**.
- 60.—Pile and tomentum of head and abdomen wholly black; base of wings to tip of discal cell blackish; the apex hyaline.....23. **atrata**.  
 Pile and tomentum of head and abdomen partly white or yellowish.....61.
- 61.—Apex of wings beyond base of second submarginal cell never distinctly hyaline and brown; either wholly hyaline or wholly smoky.....62.  
 Apex of wings beyond base of second submarginal cell distinctly hyaline and brown; three submarginal cells in each wing; second vein strongly curved S-shaped before its apex .....2. **serpentina**.
- 62.—Wings destitute of a brown cloud at base of second submarginal cell.....64.  
 Wings with a brown cloud at base of second submarginal cell; front tibiae destitute of bristles; no subhyaline border to veins at bases of first and fourth posterior cells.....63.
- 63.—First two antennal joints subequal in length, base of the third joint subglobular; tomentum of occiput white.....32. **cautor**.  
 First antennal joint nearly twice as long as the second, base of the third joint elongate-conical; tomentum of occiput yellowish...40. **dispar**.
- 64.—Front tibiae destitute of bristles... ..67.  
 Front tibiae provided with bristles.....65.
- 65.—Veins at bases of first and fourth posterior cells not bordered with subhyaline; tomentum of occiput white.....66.  
 Veins at bases of first and fourth posterior cells bordered with subhyaline; proboscis projecting half its length beyond the oral margin; tomentum of occiput yellowish.....41. **rex**.
- 66.—Face much produced below; tomentum of basal half of abdomen largely yellow, pile of sides also yellowish.....36. **perplexa**.  
 Face not produced below; tomentum of basal half of abdomen black; pile of sides also black.....25. **curta**.





- 81.—Anal, or at least the axillary cell partly hyaline.....83.  
 Anal and axillary cells wholly brown; no pure hyaline spot in base of the  
 marginal nor of the second basal cell.....82.
- 82.—Discal cell wholly brown; claws of front tarsi minute.....88.  
 Discal cell hyaline at the apex; claws of front tarsi well developed.  
 54. **selene.**
- 83.—Veins at bases of the first and fourth posterior cells bordered with subhyaline.....84.  
 Veins at bases of first and fourth posterior cells never bordered with subhyaline.....86.
- 84.—Brown of wings does not enclose a hyaline spot at base of second submarginal cell.....85.  
 Brown of wings encloses a hyaline spot at base of second submarginal cell;  
 sides of third abdominal segment furnished with black pile.  
 44. **pertusa.**
- 85.—Sides of third abdominal segment destitute of black pile....43. **nugator.**  
 Sides of third abdominal segment furnished with black pile.  
 72. **fenestratoides.**
- 86.—Venter partly or wholly reddish.....87.  
 Venter wholly black; pile of sides of abdomen prevailing whitish.  
 46. **tegminipennis-sackenii.**
- 87.—Wings with blackish clouds on veins at bases of first, third and fourth posterior cells.....73. **sabulosa.**  
 Wings destitute of blackish clouds.....1. **junctura.**
- 88.—Apex of wings wholly brown, but little lighter than the basal part. ....89.  
 Apex of wings hyaline or grayish, noticeably lighter than the basal part..90.
- 89.—Posterior margin of abdominal segments black tomentose; legs largely black .....47. **lucifer.**  
 Posterior margins of abdominal segments destitute of black tomentum;  
 legs reddish.....46. **tegminipennis.**
- 90.—Brown of wings blackish; the apex pure hyaline.....24. **miscella.**  
 Brown of wings yellowish; the apex smoky.....48. **alpha-fuliginosa.**

## Notes and Descriptions.

### 1. **Anthrax junctura** Coq.

The thirteen specimens upon which I founded this species were captured in Orange County, California, and each of them, with a single exception, has three submarginal cells in each wing, the exception noted having four of these cells in one wing and five in the other, formed by adventitious cross-veins in the third submarginal cell. The past season I collected three specimens in Los Angeles County and five in San Diego County, agreeing in every respect with the above, except in possessing only two submarginal cells in each wing; otherwise I am unable to discover the slightest difference between these two forms, and I do not hesitate to pronounce them

simply forms of one and the same species. This species thus gives us additional proof for suppressing the proposed genera *Dipalta* O. S. and *Stonyx* O. S., both of which differ from a typical *Anthrax*, by possessing three instead of only two submarginal cells in each wing.

3. **A. elelia** O. S.

Described as a *Stonyx*; synonym *Anthrax keenii* Coq.

7b. **A. lateralis** Say.

Two of my specimens are from Jamaica. The variety *fulvipes* Coq. belongs to the present species rather than to *alternata*.

7c. **A. gracilis** Macq.

A single specimen from Florida agrees with *alternata* in having the front tibiae provided with bristles, but the claws of the front tarsi are fully three-fourths as long as those of the middle tarsi, whereas, both in *alternata* and *lateralis* they are scarcely one-third as long. This specimen is 10 mm. long, very slender and marked nearly the same as *lateralis*. Of course, there is no certainty that this is the form Macquart had before him when drawing up his description of *gracilis*, but his name is very appropriate for the present species, and his description also agrees fairly well with it.

10. **A. muscaria** n. sp.—(Syn. *Anthrax mucorea* Coq., non Loew).—Black. Front pale yellow tomentose and black pilose; face but slightly produced below, yellowish white tomentose. Proboscis not projecting. Antennae with the first joint one and a half times as long as the second, black pilose above, yellowish pilose below; base of the third joint short-conical. Occiput white tomentose, that in the middle above pale yellow. Thorax mixed black and pale yellow tomentose, the latter most abundant on the sides and at each end; pile of dorsum very short, black, bristles whitish, pile of front end, sides and upper half of pleura yellowish white, of the rest of pleura, breast and coxae white. Scutellum mixed black and pale yellow tomentose, the latter most abundant along the edge; bristles yellowish. Abdomen black tomentose, that at bases of segments one, two and three, on apices of five and six, and nearly whole of four and seven light yellow, the seventh furnished with silvery tomentum in the male; pile of dorsum rather sparse, mixed white and black, that on the sides abundant, on first three segments yellowish white, on remaining segments more sparse, depressed, and mixed with depressed scales; venter white tomentose, a cross-band of black tomentum at bases of third, fifth and sixth segments. Legs white and dark yellow tomentose, that on apex of each femur in front largely black; front tibiae destitute of bristles, claws of front tarsi minute. Wings hyaline, costal cell yellowish, base of wing in front dark yellow tomentose, mixed with a few black bristles, which also form a fringe on the costal edge; no epaulette of silvery scales at its base in either sex. Length 8—10 mm.

Southern California. Twenty-four specimens in October and November.

11. **A. molitor** Loew.

The Colorado specimens referred to in my monograph belong to *agrippina* O. S. (No. 61). The forms *pretiosa* Coq. and *vacans* Coq. which I regarded as varieties of *molitor*, are certainly distinct, and are fully characterized herewith.

11a. **A. pretiosa** n. sp.—(Syn. *A. molitor* var. *pretiosa* Coq.)—Black. Front sparse, yellowish white tomentose and black pilose, face greatly retreating below, yellowish white tomentose and light yellow pilose. Proboscis not projecting. Antennæ with first joint twice as long as the second, black pilose above, that below largely yellow, base of third joint short-conical. Occiput pure white tomentose, that in the middle above pale yellowish. Thorax mixed black and yellow tomentose, the bristles reddish, pile of front end, sides, and upper part of pleura golden-yellow, that on lower part of pleura, breast and coxæ light yellow, sometimes almost white. Scutellum mixed black and golden-yellow tomentose, that around the edges golden-yellow, the bristles reddish, but sometimes a few are black. Abdomen black and golden-yellow tomentose, the black being on first segment (scanty), on apices of second, third and fourth segments, and on bases of the fifth and sixth segments; last segment never silvery tomentose in the male; pile of dorsum very sparse, black and reddish, that on the sides dense, golden-yellow, that on sides of fifth and sixth segments sometimes black; venter golden-yellow, or yellowish white tomentose; that at bases of fifth and following segments narrowly black. Legs golden-yellow, or yellowish white, tomentose, that in front partly black; front tibiæ provided with bristles, claws of front tarsi about one-half as long as those of the middle tarsi in the female, but only one-third as long as in the male. Wings hyaline, costal and usually the first basal cell yellowish; base of wings of female in front golden-yellow tomentose, that along the outward edge black; in the male provided with silvery scales, and with a silvery epaulette. Length 10–14 mm.

Southern California. Nineteen specimens in July.

11b. **A. vacans** n. sp.—(Syn. *A. molitor* var. *vacans* Coq.)—Black. Front yellowish tomentose and black pilose; face slightly produced below, yellowish tomentose. Proboscis not projecting. Antennæ with first joint twice as long as the second, black pilose above, yellowish pilose below; base of third joint short-conical. Thorax mixed black and brassy-yellow tomentose, bristles reddish, pile of dorsum black, that on front end, sides and pleura yellowish white, that on breast and coxæ largely black. Scutellum mixed black and brassy-yellow tomentose, bristles black. Abdomen black tomentose, that on first segment and bases of the second and fourth segments pale yellow, that on the fourth segment forming a distinct cross-band; pile of dorsum rather abundant, mixed yellowish white and black, that on the sides very abundant, erect and bushy, yellowish white, except that on sides of segments five and six and on apex of the last segment, which is black; venter mixed black and yellowish tomentose and pilose. Legs largely black tomentose in front, dark yellow tomentose behind; front tibiæ provided with bristles, claws of front tarsi less than half as long as those of the other tarsi. Wings hyaline, costal cell yellowish, base of wings in front largely black tomentose. Length 18 mm.

Washington. A single female specimen.

14. **A. anna** Coq.

The males of this species have the front densely covered with tomentum, and the black pile is confined to the crown; in the females the tomentum of the front is sparse, not concealing the ground color, and the whole front is black pilose.

27. **A. vana** Coq.

This is the most variable species known to me, scarcely any two specimens being marked exactly alike. The base of the third antennal joint is elongate-conical; tomentum of abdomen whitish, that on apices of second and third segments more yellow, or sometimes largely black, on apex of fourth segment black, but sometimes that on apex of each segment, except the first, is largely black; the claws of the front tarsi are minute; the second basal, anal and axillary cells are sometimes almost pure hyaline; the length of the body varies from 7—15 mm.

37. **A. vigilans** Coq. = *Anthrax edititia* Say.

The description was drawn from small specimens.

41. **A. rex** O. S.—Syn. *Anthrax plagosa* Coq.43. **A. nugator** Coq.

A single specimen from Arizona has three submarginal cells in each wing as in the genus *Exoprosopa*.

45. **A. mira** Coq.

A single specimen which I collected in Calaveras County, Cal., has no trace of the black tomentose cross-band on the fourth segment of the abdomen, but otherwise does not differ from the type; it is evidently only a color variety.

50. **A. aleyon** Say.

As pointed out by Osten Sacken in the "Biologia Centrali-Americana," there is no valid reason for changing this name to *haleyon*, as Wiedemann has done.

54. **A. selene** O. S.—Syn. *Anthrax otiosa* Coq.

55. **A. cinefacta** n. sp.—Black, face largely pale yellow, and with a deep groove in the middle, base of tibiae usually yellowish. Front in the female above yellow tomentose, that below whitish, pile white; in the male densely white tomentose and destitute of erect pile; face slightly produced below, whitish tomentose. Proboscis never projecting more than the length of its labellæ beyond the oral margin. Antennæ with the first two joints subequal in length, the third elongate-conical at its base. Occiput white tomentose, that in

the middle above yellowish. Thorax yellowish white tomentose, bristles white, pile of front end, sides, pleura, breast and coxæ whitish. Scutellum yellowish white tomentose, bristles white. Abdomen wholly yellowish white tomentose; pile of dorsum very sparse, of the sides more abundant, white; venter white tomentose and pilose. Legs white tomentose, front tibiæ destitute of bristles, claws of front tarsi minute. Wings wholly hyaline, base of costa yellowish white tomentose, the front edge beset with black bristles. Length 5--7 mm.

San Diego County, Cal. Six specimens in May.

56. *A. ineulta* n. sp.—Black. Front on upper half golden-yellow tomentose, that on lower half largely white, pile on upper half black, that on lower half whitish; face slightly produced below, white tomentose, that on extreme sides yellow. Proboscis projects half the length of the labellæ beyond the oral margin. Antennæ with first two joints subequal in length, black pilose, base of third joint short-conical. Occiput white tomentose. Thorax light yellow tomentose, and with a cross-band of white tomentum near the front end, continued along each side above the wings, reaching the scutellum; pile of front end and sides of thorax, on front half of pleura, on breast and middle and hind coxæ light yellow, that on posterior half of pleura white, on front coxæ largely black. Scutellum light yellow tomentose, that on the base white, the bristles reddish. Abdomen light yellow tomentose, that on bases of second and third segments white; pile of dorsum very sparse, black; that on sides of first two segments abundant, yellowish white, on sides of remaining segments sparse and mostly black; venter light yellow tomentose and pilose. Legs light yellow tomentose, front tibiæ destitute of bristles, claws of front tarsi minute. Wings hyaline, subcostal cell yellowish. Length 7 mm.

San Bernardino County, Cal. A single specimen in July.

57. *A. terrena* n. sp.—Black. Front and face pale yellow tomentose and black pilose, face considerably produced below. Proboscis projecting half the length of the labellæ or less beyond the oral margin. Antennæ with first two joints of an equal length, black pilose, the third joint at its base short-conical. Occiput yellowish white tomentose, that in the middle above dark yellow. Thorax pale yellow tomentose, the bristles whitish, pile of front end yellowish white, of pleura, breast and coxæ white. Scutellum pure yellow tomentose, bristles reddish. Abdomen mixed yellowish white, and dark yellow tomentose; pile of dorsum very sparse, black, on first segment and sides of second rather abundant, white, on sides of the remaining segments sparse, black; venter white tomentose and pilose. Legs white tomentose; front tibiæ destitute of bristles, claws of front tarsi minute. Wings hyaline, costal and first basal cells yellowish. Length 5--7 mm.

Los Angeles and Kern Counties, Cal. Ten specimens in June.

58. *A. squamigera* n. sp.—Black. Front black pilose, destitute of tomentum except on lower fourth, where it is sparse and white, a shallow fovea below middle of front; face much retreating below, white tomentose and pilose. Proboscis not projecting. Antennæ with the first joint twice as long as the second, black pilose, base of the third joint very short-conical, the styliform portion slender and linear. Occiput white tomentose. Thorax brassy-yellow tomentose, bristles black, pile of front end light yellow, of pleura, breast and coxæ white.



Scutellum brassy-yellow tomentose, bristles black. Abdomen black tomentose, a cross-band of white and pale yellow tomentum on bases of second and fourth segments, tomentum of last three segments largely brassy-yellow; pile of dorsum very sparse, black, of sides of first two segments abundant, white, on sides of remaining segments sparse, black, and intermixed with long, euneate black scales, those on sides of last segment white; venter white tomentose, that on last three segments brassy-yellow, the pile white and black. Legs whitish tomentose, front tibiæ destitute of bristles, claws of front tarsi small. Wings hyaline, subcostal cell, except its extreme apex, yellow. Length 6 mm.

San Diego County, Cal. A single specimen in May.

59. **A. gemella** n. sp.—Black. Front and face brassy-yellow tomentose, black pilose; face considerably produced below. Proboscis not projecting. Antennæ having the first joint one and a half times as long as the second, black pilose, third joint gradually tapering from base to apex. Occiput, thorax and scutellum brassy-yellow tomentose, bristles of the two latter black, pile of front end of thorax light yellow, of the sides, pleura, breast and coxæ black. Abdomen black tomentose, bases of second and third segments and nearly all of the last two segments brassy-yellow tomentose; pile of dorsum very sparse, black, that on sides of first two segments mixed light yellow and black, on sides of remaining segments very sparse, black; venter mixed black and brassy-yellow tomentose. Legs black tomentose, in certain lights brassy, all femora and front tibiæ destitute of bristles; claws of front tarsi small. Wings hyaline, costal and first basal cells yellowish. Length 5 mm.

San Diego County, Cal. A single specimen in May.

60. **A. hircina** n. sp.—Black. Front and face golden-yellow, tomentose, and black pilose; face very little produced below. Proboscis not projecting. Antennæ having the first joint one and a half times as long as the second, black pilose, base of third joint short-conical. Occiput, thorax and scutellum yellowish white tomentose, bristles of the two latter black; pile of dorsum of thorax black, that of the front end, sides and upper part of pleura yellowish white, of breast mixed black and yellowish white, of lower part of pleura and coxæ black. Abdomen white tomentose, that on posterior ends of segments two to five black, most extended on segments two and five; pile of dorsum very sparse, black, that on the sides rather abundant, on sides of first segment and base of the second white, of remaining segments mixed black and white, the black ones the most numerous; venter white pilose, the tomentum black, but in certain lights with a brassy tinge. Legs white and brassy-yellow tomentose, front tibiæ destitute of bristles, claws of front tarsi minute. Wings hyaline, subcostal cell yellowish. Length 8 mm.

San Diego County, Cal. A single specimen in May.

61. **A. agrippina** O. S.

Originally described from Mexico. I have specimens from California, Washington, Colorado and New Mexico.

63. **A. telluris** n. sp.—Black. Front and face yellowish white tomentose and black pilose, face but slightly produced below. Proboscis not projecting. Antennæ having the first joint one-half longer than the second, base of the third

joint very elongate-conical. Occiput yellowish white tomentose. Thorax pale yellow tomentose and black pilose, bristles black, pile of front end yellowish white and black, pile of sides, pleura, breast and coxæ wholly black. Scutellum mixed pale yellow and white tomentose, bristles black. Abdomen black tomentose, which in certain lights has a brassy tinge, that on bases of second and third segments whitish, on last two segments almost wholly pale yellow; pile of dorsum very sparse, black, that on first segment and front corner of second more abundant, white, on sides of rest of abdomen sparse, black; venter black, tomentose, in certain lights appearing brassy. Legs with tomentum like that of the venter; front tibiæ destitute of bristles, claws of front tarsi small. Wings hyaline, costal, first and second basal cells slightly smoky. Length 6 mm.

Los Angeles County, Cal. Two specimens in May.

64. *A. vulpina* n. sp.—Black, face, first two antennal joints, sides of abdomen broadly, venter, femora and tibiæ reddish. Front golden-yellow tomentose and black pilose; face greatly produced below, golden-yellow tomentose, mixed yellow and black pilose. Proboscis projecting the length of its labellæ or less beyond the oral margin. Antennæ having the first joint nearly twice as long as the second, base of third joint elongate-conical. Occiput bright yellow tomentose. Thorax and scutellum golden-yellow tomentose, bristles reddish, pile of front end and sides of thorax, of pleura, breast and coxæ dark yellowish. Abdomen wholly golden-yellow tomentose, pile of dorsum very sparse, of sides more abundant, yellow; venter golden-yellow tomentose and pilose. Legs golden-yellow tomentose, front tibiæ destitute of bristles, claws of front tarsi very small. Wings hyaline at the apex, the base pale brown, the outline of this color extending from first vein midway between the apex of auxiliary and base of second vein, going to discal cell at its last third, then basally a very short distance, then running through the third and fourth posterior cells, reaching the penultimate vein near middle of fourth posterior cell; whole of axillary cell hyaline, anal and second basal cells very pale smoky, darkest near their apices, base of discal cell brown to beyond the small cross-vein. Length 9 mm.

San Bernardino County, Cal. Two specimens in July.

65. *A. crocina* n. sp.—Black, abdomen, except the first and last segments, orange-yellow. Front pale or golden-yellow tomentose above, that next the antennæ white, its pile mixed white, yellow and black; face slightly produced below, white tomentose. Proboscis not projecting. Antennæ having the first joint one-half longer than the second, base of third short-conical, the styloform portion gradually tapering to the tip. Occiput white tomentose, that in the middle above golden-yellow. Thorax deep golden-yellow tomentose, in certain lights with a coppery tinge; pile of front end and sides white, bristles black and yellow; pile and tomentum of pleura and breast white. Scutellum golden-yellow tomentose, bristles black. Abdomen deep orange-yellow tomentose, a cross-band of white tomentum on base of second, third and fourth segments, and at apex of the first and sixth segments, the former cross-band or orange yellow in the middle; sides of first and base of second segment on the sides abundant, rather long, white pilose, sides of rest of abdomen nearly destitute of pile; venter orange-yellow tomentose, on the base broadly, and at apex of the penultimate segment narrowly white. Legs white tomentose, front tibiæ destitute of

bristles, claws of front tarsi minute. Wings hyaline at the apex, the base grayish black, the outline of this color extending from apex to auxiliary vein, along first vein nearly to base of second vein, then transversely to the last vein near its apex, leaving the extreme apex of the anal cell and all of the axillary cell in the hyaline part; the dark color fills discal cell to small cross-vein and fills only the extreme base of the third posterior cell; cross-veins not bordered with subhyaline, no dark spots in the hyaline portion. Length 5—7 mm.

San Bernardino County, Cal. Four specimens in July.

66. **A. tantilla** n. sp.—Black. Front yellowish white tomentose and short, white pilose; face but slightly produced below, white tomentose. Proboscis not projecting. Antennæ having the first joint twice as long as the second, base of third joint very short-conical. Occiput white tomentose. Thorax light yellow tomentose, bristles yellowish, pile on front end, sides, pleura, breast and coxæ white. Scutellum mixed white and light yellow tomentose, that on the margin white, bristles yellowish. Abdomen white tomentose, that on apex of each segment except the first, golden-yellow; pile on sides of first two segments abundant, white, almost wanting on the remaining portion of abdomen; venter white tomentose. Legs behind white tomentose, that in front largely black and yellow, front tibiæ destitute of bristles, claws of front tarsi very small. Wings hyaline at apex, the base pale smoky, the outline of this color not distinct, extending from first vein near base of second and going nearly straight to last vein, leaving the first submarginal, first and third posterior, apical fourth of the anal and apical third of the axillary cell, in the hyaline part; brown does not fill discal cell to small cross-vein. Length 5 mm.

San Diego County, Cal. A single specimen in May.

67. **A. variata** n. sp.—Black. Front light yellow tomentose and black pilose; face but slightly produced below, light yellow tomentose. Proboscis projecting half the length of the labellæ beyond the oral margin. Antennæ having the first two joints subequal in length, the base of the third joint short-conical. Occiput white tomentose, that in the middle above light yellow. Thorax and scutellum light yellow tomentose, bristles yellow, pile of front end and sides of thorax, of pleura, breast and coxæ, yellowish white. Abdomen wholly yellowish white tomentose, pile of sides of first two segments abundant, on rest of abdomen very sparse, white; venter white tomentose and pilose. Legs white tomentose, that in front largely yellow, front tibiæ destitute of bristles, claws of front tarsi well developed. Wings hyaline at apex, the base brown, the outline of this color extending from apex of auxiliary vein transversely to second vein, then basally a short distance, then transversely to fifth vein at middle or last third of third posterior cell, then following down this vein to its apex, leaving whole of axillary, anal and fourth posterior cells in the brown part; apex of fourth posterior sometimes very pale, almost hyaline; brown fills discal cell to its last sixth. Length 5—6 mm.

Los Angeles and Kern Counties, Cal. Three specimens in May.

68. **A. vasta** n. sp.—Black. Front and face pale yellow tomentose and short black pilose; face but slightly produced below. Proboscis projecting one-fourth its length beyond the oral margin. Antennæ having the first joint nearly twice as long as the second, base of third joint elongate-conical. Occiput, thorax

and scutellum yellowish white tomentose, bristles white, pile of front end and sides of thorax, and of pleura, yellowish white, that on the breast and coxae mixed black and yellowish. Abdomen apparently wholly yellowish white tomentose, pile of dorsum sparse, mixed black and whitish, that on sides abundant, white; venter white tomentose and pilose. Legs mixed black and pale yellow tomentose, front tibiae provided with bristles, claws of front tarsi well developed. Wings hyaline at apex, the base blackish brown, the outline of this color not well defined, extending from apex of auxiliary vein transversely to apex of fourth posterior cell, leaving all of the anal, axillary, fourth posterior and discal cells in the brown, which color fills base of first posterior cell to apex of discal cell, and also fills extreme base of second posterior cell. Length 8 mm.

San Diego County, Cal. A single specimen in May.

69. **A. lacunaris** n. sp.—Black, lower half of front usually, face, first two antennal joints, apex of abdomen broadly, venter, femora and tibiae, reddish. Front golden-yellow tomentose and black pilose; face greatly produced below, mixed yellowish white and golden-yellow tomentose and short black pilose. Antennae having the first joint twice as long as the second, the third joint elongate-conical at its base. Proboscis projects the length of its labellae beyond the oral margin. Occiput white, or yellowish white tomentose, that in the middle above golden-yellow. Thorax yellowish or golden-yellow tomentose, bristles whitish, or deep yellowish, pile of front end, sides, pleura and breast yellowish white, that on the coxae golden-yellow and black. Scutellum yellowish white tomentose, bristles whitish. Abdomen yellowish white tomentose, that on apex of second and third segments in the middle black, that on apex of last three segments golden-yellow; pile on dorsum very sparse, that on the hind part black, on the sides quite abundant, white, becoming yellowish or black toward the apex; venter white tomentose and white or black pilose. Legs mixed black and golden-yellow tomentose; front tibiae provided with numerous bristles, claws of front tarsi well developed. Wings hyaline at apex, the base dark brown, that in second basal, and bases of anal and axillary cells light yellow; base of third vein also bordered with light yellow; outline of the brown color extends from apex of auxiliary vein obliquely to the second vein, then basally a short distance, then transversely to last fifth of discal cell, then basally to a point slightly beyond the small cross-vein, then curving through third posterior cell to or slightly beyond the middle of the fourth posterior cell on the penultimate vein; whole of anal cell brown, apical half of axillary cell usually lighter brown or hyaline; brown does not fill discal cell to small cross-vein; sometimes a brown cloud on veins at bases of second submarginal and second posterior cells. Length 8—11 mm.

San Bernardino County, Cal. Eighteen specimens in July.

70. **A. lepidota** O. S.

Originally described from Mexico. I captured a single specimen in San Bernardino County, Cal., in July.

72. **A. fenestratoides** n. sp.—Black, the lower part of front, face, first two antennal joints, scutellum, sides of abdomen broadly, venter, except at base, reddish; legs piceous. Front pale yellow tomentose and black pilose, face slightly produced below, white tomentose and pilose, oral margin in front black

and yellow pilose. Proboscis not projecting. Antennæ having the first joint twice as long as the second, both joints black pilose, base of the third joint very elongate-conical. Occiput white tomentose. Thorax whitish tomentose and short black pilose, front end pale yellow pilose, the usual bristles reddish; pleura in front and front coxæ yellowish pilose, that beneath each wing pure white. Scutellum white tomentose, that at the base black, the bristles reddish. Abdomen black tomentose, that on front corner of segments two, three and four broadly white, most extended on the fourth segment, that on apex of fifth segment deep yellowish, on apex of sixth and whole of seventh segment white; pile of dorsum mostly black, that on sides of first segment, of anterior two-thirds of the second, many of those on the fourth and all on the seventh segment white, the rest black; venter white tomentose, that on bases of last three segments largely black. Legs having front tibiæ destitute of bristles, claws of front tarsi minute. Wings hyaline at apex, the base brown, filling costal cell to apex of auxiliary vein; outline of brown crosses marginal cell at two-thirds distance from base of second vein to apex of auxiliary vein, crosses first submarginal and first posterior cells at about half way from small cross-vein to apex of discal cell, passing basally in discal cell to a point opposite the small cross-vein, then going to middle of vein between third and fourth posterior cells, then to last third of vein between fourth posterior and anal cells; apex of anal cell to base of fourth posterior cell hyaline, apex and hind margin of axillary cell broadly hyaline; a hyaline spot in base of marginal, in middle and base of first basal, in each end of second basal, and in base of anal cell, also a hyaline spot on veins at bases of first submarginal, first, third and fourth posterior cells, the latter spot not pure hyaline; a subhyaline spot in costal cell before the humeral cross-vein. Length 11–13 mm.

San Bernardino County, Cal. Two specimens in July.

This is our nearest representative of the European *Anthrax fenes-trata*, differing chiefly by the less extended brown coloring on the wings.

73. **A. sabulosa** n. sp.—Black, the face, first two antennal joints, apex of scutellum, sides of abdomen broadly, venter, femora and tibiæ reddish. Tomentum of entire body light golden-yellow, that on the venter lighter. Front and face mixed black and yellow pilose, face but slightly produced below, proboscis projecting half the length of its labellæ or less beyond the oral margin. Antennæ having the first joint twice as long as the second, base of third joint very elongate-conical; bristles of thorax and scutellum yellow, pile of front end and sides of thorax, of pleura, breast and coxæ yellowish. Pile of dorsum of abdomen very sparse, mixed black and yellow, that of sides rather abundant, light yellow. Front tibiæ destitute of bristles, claws of front tarsi very small. Wings grayish hyaline at apex, the base yellowish brown, the outline of this color not distinct, extending from first vein half-way between base of second and apex of auxiliary veins, crossing obliquely to penultimate vein near base of fourth posterior cell, leaving apical fourth of anal cell and nearly all of the axillary cell in the hyaline portion, but sometimes the apex of the anal cell is smoky-brown; a large blackish cloud on veins at bases of first, third and fourth posterior cells, and at base of the discal cell, also a smaller one at base of the second submarginal and second posterior cells; sometimes there is a subhyaline

spot in base of marginal and discal cells, in middle of first basal, and a large one in second basal and anal cells. Length 11—13 mm.

San Bernardino County, Cal., and New Mexico. Five specimens in July and August.

74. **A. fannus** Fabr.

Heretofore known only from South America and the West Indies. A specimen labeled as having been collected in Florida was in a small collection sent me for names by Mr. C. W. Johnson, of Philadelphia, Pa.

75. **A. arenosa** n. sp.

Closely resembles *Anthrax vulpina* (No. 64, supra), but differs as follows: Face black, scarcely produced below. First two antennal joints subequal in length, base of the third joint short-conical. A cross-band of black tomentum on the fourth abdominal segment. Brown of wings very pale, axillary cell slightly infumated, the brown in second basal and anal cells not darker in their apices than elsewhere. Length 6 mm. New Mexico. A single specimen in June.

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**DESCRIPTIONS OF NEW, OR LITTLE-KNOWN NORTH AMERICAN HARVEST-SPIDERS (PHALANGIIDÆ).**

By CLARENCE M. WEED, D. Sc.

The present paper contains some of the more important results of a study—made partly during the writer's connection with the Ohio Agricultural Experiment Station—of a large collection of Phalangiidæ gotten together during the last eight years. For a considerable proportion of this material I am indebted to the kindness of the following gentlemen: Prof. Wm. B. Alwood, Prof. Geo. F. Atkinson, Mr. Nathan Banks, Mr. Lawrence Bruner, Prof. J. H. Comstock, Mr. D. W. Coquillett, Prof. S. A. Forbes, Prof. H. Garman, Prof. C. P. Gillette, Prof. D. S. Kellicott, Mr. Theodore Pergande, Mr. H. E. Weed and Prof. C. W. Woodworth. The drawings from which the accompanying plates have been engraved were made by Miss Freda Detmers, to whose artistic skill I have so frequently been indebted.

***Liobunum nigropalpi*** (Wood) Weed. Plate IV.

*Phalangium nigropalpi* Wood, Conn. Essex Institute, vol. vi, pp. 22–23, 39.

*Phalangium nigropalpi* Wood. Underwood, Can. Ent. vol. xvii, p. 168.

*Liobunum nigropalpi* (Wood). Weed, Amer. Nat. vol. xxiv, p. 918.

*Male*.—Body 6—7 mm. long, 4 mm. wide; palpi 5 mm. long. Legs: first, 40—